


# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference IPB/130259		<b>FOR FURTHER ACTION</b>		See Form PCT/PEA416
International application No. PCT/IB2005/000142		International filing date (day/month/year) 20.01.2005	Priority date (day/month/year) 20.01.2004	
International Patent Classification (IPC) or national classification and IPC B01D19/00, E21B43/34				
Applicant EPCON Offshore AS				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 2 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand  18.11.2005		Date of completion of this report  03.01.2006		
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer  Plaka, T  Telephone No. +31 70 340-2325		



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/B2005/000142

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-11 as originally filed

**Claims, Numbers**

1-10 received on 25.11.2005 with letter of 18.11.2005

**Drawings, Sheets**

1/3-3/3 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/IB2005/000142

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: EP-A-1 208 897 (EPCON NORGE AS) 29 May 2002 (2002-05-29)

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not inventive in the sense of Article 33(3) PCT.

Document D1 (cf. abstract) discloses a combined degassing and flotation particularly suited in oil production for removal of oil and gases from water streams. The technical features of the separator as in claim 1 are present in the separator of D1.

The difference of the subject-matter of the use claim 1 over the disclosure of D1 is that at least two separators are used and that the fluid to be separated is subjected to gas injection.

There is no effect in simply using two or more identical separators without stating any interrelationship between them and furthermore, there is no surprising effect in injecting gas in a multi-phase fluid to be separated, apart from the obvious effect of improved separation.

Also, the additional features of dependent claims 2 to 10 appear to be conventional, and therefore no inventive step could be justified for said claims.

IAP11 Rec'd PCT/PTO 19 JUL 2006

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## P A T E N T   C L A I M S

1. Use of at least two separators, each separator comprising an essentially cylindrical vertical tank (1), a tangentially arranged inlet (2), at least one outlet (3) for oil and gas in the upper part of the tank, an  
5 outlet (4) for water placed in the lower part of the tank, an inner concentric wall (10) formed as a cylinder placed in the upper part of the tank leaving an open space between said cylinder and the top of the space, and further leaving a space between said cylinder and the bottom of the tank, an outlet (8) for solids placed in the lower part of the  
10 tank, and optionally provided with an inlet guide vane (11) placed between the tank (1) and the inner cylinder (10) leaving an open space between the inner cylinder and the inlet guide vane (11), and further optionally provided with a concentrically arranged horizontal circular plate (12) having a smaller diameter than the tank placed in the lower  
15 part of the tank above the outlet for water (4) and solids (8), for the initial separation at the well of the fluid from an oil and gas reservoir, wherein the fluid is subjected to gas injection for improved separation in at least one of said separator tanks.
2. Use according to claim 1, wherein the fluid from an oil and gas  
20 reservoir is subjected to gas injection before entering the separator tank.
3. Use according to claim 1 or 2, wherein the gas for gas injection is a hydrocarboneous gas.
4. Use according to any of the claims 1-3, wherein the gas for in-  
25 jection is gas recycled from the oil and gas production.
5. Use according to any of the claims 1-4, wherein two or more separator tanks are used in series.
6. Use according to any of the claims 1-4, wherein two or more separator tanks are used in parallel.
- 30 7. Use according to any of the preceding claims, wherein the pressure in separator the tank is from atmospheric pressure and up.
8. Use according to any of the preceding claims, wherein the initial separation comprises treatment of about  $100 \text{ m}^3$  fluid per hour per  $1 \text{ m}^3$  separator tank volume.

9. Use according to any of the preceding claims, wherein the fluid is separated into an oil/gas phase and a water phase.

10. Use according to claim 9, wherein the oil/gas phase is separated into an oil phase and a gas phase in an additional stage.